

## **HIGH-PRECISION MASSES AND RADII OF LOW-MASS ECLIPSING BINARY STARS**

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We propose to obtain Kepler light curves of 7 long-period low-mass eclipsing binary (EB) targets. By making high-precision observations during the eclipses of these binaries we aim to resolve the long standing discrepancy between the theoretical and observational mass-radius relations at the bottom of the main-sequence, namely that the observed radii of low-mass stars are up to 15% larger than predicted by structure models. It has been suggested that this discrepancy may be related to strong stellar magnetic fields, which are not properly accounted for in current theoretical models. All previously well-characterized low-mass main-sequence EBs have periods of a few days or less, and their components are therefore expected to be rotating rapidly as a result of tidal synchronization, thus generating strong magnetic fields. We hypothesize that the stars in the binaries with longer orbital periods, which are expected to have weaker magnetic fields, will better match the assumptions of theoretical stellar models. By employing Kepler's high-precision photometry we will be able to determine the radius of both components to within a fraction of percent, which thus far has not been done for any low-mass binary with periods longer than a few days.